AMENDMENTS TO THE DRAWINGS WITHOUT MARKINGS

IN THE DRAWING:

Fig. 1 has been amended.

REMARKS

The last Office Action of June 23, 2006 has been carefully considered. Reconsideration of the instant application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 1-8 are pending in the application. Claims 1, 4, 5 and 8 have been amended. Claims 9 and 10 have been added. Amendment to the specification have been made. No fee is due.

It is noted that the title of the specification has been objected to because of being non-descriptive.

It is further noted that the drawings are objected to because of applicant's failure to show every feature set forth in the claims. A new drawing sheet is submitted and labeled "Replacement Sheet".

It is further noted that claims 1-8 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 5,333,706 to Mori in view of U.S. Pat. No. 6,213,571 to Yamada et al., and further in view of U.S. Pat. No. 6,531,839 to Shin et al.

OBJECTION TO THE TITLE

Applicant has changed the title to read -- DRIVE CIRCUIT FOR BRAKING A MOTOR DURING A MALFUNCTION --, as suggested by the Examiner.

Withdrawal of the objection to the title is thus respectfully requested.

OBJECTION TO THE DRAWING

Applicant has made amendments to FIG. 1 in order to show the "memory" now labeled by reference sign "ME". Paragraph [0024] of the specification has

been amended to reflect the drawing change.

The rejection of the drawings for failure to show the "armature short-circuit brake" is hereby traversed. An armature short-circuit brake is not a separate element (like the mechanical brake MB), but results from the cooperation between the controller RE and the converter U. As stated clearly in paragraph [0018} of the specification, "the controller RE can cause the converter U to produce an integrated armature short-circuit in the motor." The braking effect of the armature short-circuit is described in the specification throughout.

35 U.S.C. 113 states that "[t]he applicant shall furnish a drawing where necessary for the understanding of the subject matter to be patented." (see also MPEP 608.02) However, it is Applicant's contention that a separate drawing (other than the supplied FIG. 1) is not necessary for an understanding of the claimed armature short-circuit brake, as the necessary components (RE and U) are clearly shown.

Withdrawal of the objection to the drawing is thus respectfully requested.

REJECTION UNDER 35 U.S.C. §112, SECOND PARAGRAPH

Applicant has amended claims 1, 4, 5 and 8 to address the claim objections to claim 1 and the rejections under 35 U.S.C. §112, second paragraph. These changes are self-explanatory and cosmetic in nature and should not be considered as a narrowing amendment to trigger prosecution history estoppel.

Withdrawal of the rejection of the claims 1-8 under 35 U.S.C. §112, second paragraph is thus respectfully requested.

REJECTION UNDER 35 U.S.C. §103(a)

Applicant respectfully disagrees with the Examiner's rejection of claim 1-8 for the following reasons:

The present invention, as recited, for example, in amended claim 5, is

directed to a method for instantaneously stopping an electric motor powered by a drive system in the event of a malfunction which prevents a controlled slowdown of the electric motor. The method includes the steps of detecting the malfunction, simultaneously applying at an activation time a control signal to an integrated armature short-circuit brake and a mechanical brake, and disengaging the armature short-circuit brake when the electric motor or its control electronics reach a thermal load limit.

Amended claim 1 includes substantially identical limitations.

Mori discloses a brake apparatus for a vehicle, whereby for achieving a rapid braking action, the disk brake and the electromagnetic brake are activated simultaneously. (Col. 2, line 16-27 and col. 4, line 60-68). The examiner asserts that Mori (in col. 4, line 60-68) disengages the electromagnetic brake when a certain load limit is reached. This is incorrect, as Mori explicitly states (col. 4, lines 7-19) that "when the vehicle speed decreases below a predetermined value during brake operation, the control circuit 12, which receives a detection signal from the vehicle speed sensor 15, energizes caliper actuator 8 such that only the disc brake (or drum brake) is actuated to produce a brake operation." (Emphasis added). Accordingly, Mori fails to disclose or suggest to *disengage the armature short-circuit brake when the electric motor or its control electronics reach a thermal load limit*, as recited in claims 1 and 5.

Yamada discloses a control apparatus for an electric vehicle with an emphasis on achieving a smooth transition between regenerative braking and "plugging" braking. The term "plugging" braking, as it is known in the art, refers to an electric braking operation wherein an electric current is supplied to the motor/generator. Accordingly, Yamada does not employ a mechanical brake, as recited in claims 1 and 5, and furthermore does not teach or suggest disengaging a brake when a thermal load limit is exceed. Col. 1, lines 56-65, as cited by the examiner, refer to a method, which ensures operation of the control apparatus for electric vehicle to be maintained even if a contact voltage of the regenerative contactor cannot be detected due to failure of its wiring or the like. Therefore,

Yamada detects the absence of a contact voltage of the regenerative contactor during regenerative braking, but does not detect of a thermal load limit.

Shin describes that the delay times for mechanical and electrical/short-circuit brakes are different. However, unlike the present invention, which simultaneously applies the electromagnetic and the mechanical brakes and then disengages the electromagnetic brake when a thermal load limit is reached, Shin first reduces the rotation speed of the motor using a mechanical brake method, and when the rotation speed of the motor reduces below a predetermined speed, stops the motor using an electrical brake method. Shin uses the mechanical brake method during the high speed rotation interval to prevent heat occurrence (*but does not detect a thermal load limit*), and uses the electrical brake method during the relatively low speed interval so that the motor can be stopped within a short time. (See Shin's Abstract)

Therefore, Shin does not teach or suggest at least disengaging the armature short-circuit brake when the electric motor or its control electronics reach a thermal load limit.

Applicant therefore submits that claims 1 and 5 are patentable over the applied references to Mori, Yamada and Shin, as these references, when taken either alone or in combination, fail to teach or suggest the limitations recited in claims 1 and 5.

Claims 9 and 10, made dependent on claim 5, have been added to set forth the components and the operation of the short-circuit brake.

Claims 2-4, which depend from claim 1, and claims 6-10, which depend from claim 5, patentably distinguish over the applied prior art in the same manner as claims 1 and 5.

Withdrawal of the rejection of claims 1-8 under 35 U.S.C. §103(a) and allowance of claims 1-10 are thus respectfully requested.

CONCLUSION

Applicant believes that when reconsidering the claims in the light of the above comments, the Examiner will agree that the invention is in no way properly met or anticipated or even suggested by any of the references however they are considered.

In view of the above presented remarks and amendments, it is respectfully submitted that all claims on file should be considered patentably differentiated over the art and should be allowed.

Reconsideration and allowance of the present application are respectfully requested.

Should the Examiner consider necessary or desirable any formal changes anywhere in the specification, claims and/or drawing, then it is respectfully requested that such changes be made by Examiner's Amendment, if the Examiner feels this would facilitate passage of the case to issuance. If the Examiner feels that it might be helpful in advancing this case by calling the undersigned, applicant would greatly appreciate such a telephone interview.

Respectfully submitted,

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